REMARKS

Claims 1-5 (all remaining claims) were rejected under 35 U.S.C. §103(a) as being unpatentable over Detterman (U.S. 5,912,277) as evidenced by Gray (U.S. 4,123,376) and optionally Eshuis (U.S. 5,635,588). Claims 1-5 were also rejected under 35 U.S.C. §103(a) as being unpatentable over Lepilleur (U.S. 6,306,945) in view of Detterman. These rejections are respectfully traversed by the amended claims and the arguments presented below.

Claim 1, the only independent claim, has been amended to narrow the chlorine content of the CPVC, the inherent viscosity of the precursor PVC, and the level of the impact modifier.

The objective of the present invention is to make a CPVC compound which has heat stability and good impact strength and can be extruded with smooth surfaces. To accomplish this objective, Applicants use a CPVC compound which has from 0.2 to 2.5 parts by weight of an aluminosilicate zeolite that has a small particle size (0.25 to 1.5 microns). The zeolite enhances the heat stability provided by the metal stabilizer. Even larger particle size zeolites will enhance the heat stability of CPVC, but the larger particle size causes a drop in impact strength and also causes rough extrusions.

During the last response to an Office Action (April 11, 2008), Applicants submitted a declaration by Dr. Arthur Backman, a co-inventor of this application. Dr. Backman presented comparative data which showed that zeolite with a particle size of 2.5 microns had only about 28% of the impact strength of the same composition with a 0.4 micron particle size zeolite. Both zeolites improved heat stability, but the 2.5 micron size zeolite gave much less impact strength.

The Examiner appears to be questioning the particle size range of 0.25 to 1.5 microns in the present claims, especially the upper limit of 1.5 microns. The Examiner states that a zeolite with a mean particle size of 1.5 microns (upper end of Applicants range) might also substantially deteriorate the izod impact. Dr. Backman's declaration only evaluated 0.4 micron particle size zeolite along with the 2.5 micron size (outside claim) zeolite. The reference Lepilleur ('945) shows in col. 17, Table III, compound 1b, that 1.5 micron particle size zeolite does somewhat affect the impact strength, but to a much less degree than the 2.5 micron size shown in Dr. Backman's declaration. The example in Lepilleur (Table III) shows the 1.5 micron size zeolite gives about 70% of the impact strength as the control with no zeolite. This compares with the

2.5 micron size shown in Dr. Backman's declaration which gives only about 30% of the impact strength of the control with no zeolite.

It is submitted that an upper limit of 1.5 micron size zeolite is reasonable. Applicants believe that the optimum size for the zeolite is about 0.4 micron. Smaller sizes might be better but they are difficult to obtain. A drop in impact strength of greater than about 30% as shown by 1.5 micron size would make the compound less desirable for many applications, but acceptable for several applications. The claimed range of 0.25 to 1.5 micron size for the zeolite is an operable range and is not improper. The Examiner is requested to reconsider this objection.

Applicants' claims also recite a specific impact modifier to give smooth extrusions, that is, the organosiloxane/acrylic impact modifer.

The reference Detterman is directed to making a CPVC foam. Detterman discloses that zeolites can be used as co-stabilizers but does not teach the particle size of the zeolite co-stabilizer. Applicants have shown by Dr. Backman's declaration that even large particle zeolites will function as stabilizers. One skilled in the art of CPVC compounding would not be taught by Detterman the particle size of zeolite, as in the present invention. Detterman also does not suggest using the impact modifier together with the zeolite as is in Applicants' claims.

The reference Gray also does not teach the particle size of the zeolite. Gray is directed to a bleaching composition to remove stains from clothing. Gray does not have any teaching as to impact modifiers, CPVC, or heat stabilizers.

Detterman, as evidenced by Gray, does not teach nor suggest the present claims. The Examiner is respectfully requested to reconsider and remove the rejection.

The reference Eshuis is directed to a polymerization catalyst. About the only thing that Eshuis teaches that is relevant to the present claims would be that zeolites having a particle size of from 1 to 2 microns exist. Eshuis does not have any teaching of using the zeolites as an ingredient in CPVC or any other plastic.

Gray and Eshuis are truly non-analogous art and one skilled in the art would not consult either of these references to determine how to formulate CPVC having impact strength, heat stability, and smooth extrusion properties.

The 35 U.S.C. §103(a) rejection based on Detterman as evidenced by Gray and optionally Eshuis has been traversed. The Examiner is respectfully requested to reconsider and remove this rejection.

The reference Lepilleur et al. is directed to making a modified zeolite, where the zeolite particles are either shock annealed or has a coating applied to decrease the tendency of the zeolite to absorb water. Lepilleur discloses using zeolites in CPVC formulations, but Lepilleur does not disclose the impact modifier in the present claims. From the added teachings of Detterman, one would not be directed to make a CPVC formulation which had both the specific particle size zeolite combined with the organosiloxane/acrylic impact modifier. The amended claims are unobvious over the teachings of Lepilleur in view of Detterman.

The Examiner is respectfully requested to reconsider and allow amended claims 1-5.

Respectfully submitted,

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